

California Regional Water Quality Control Board
Santa Ana Region

FACT SHEET

GENERAL WASTE DISCHARGE REQUIREMENTS FOR CONCENTRATED ANIMAL FEEDING
OPERATIONS (DAIRIES AND RELATED FACILITIES) WITHIN THE
SANTA ANA REGION, ORDER NO. R8-2004-0055, NPDES NO. CAG018001

I. Need for General Waste Discharge Requirements

The Federal Clean Water Act (CWA) defines animal feeding operations (AFOs) as operations where animals have been, are, or will be stabled or confined and fed or maintained for a total of 45 days or more in any 12-month period, and where vegetation is not sustained in the confinement area during the normal growing season. There are approximately 254 dairy related AFOs in the Santa Ana Region. These AFOs include dairies, heifer ranches and calf nurseries, and contain about 371,000 animals [198,000 lactating (milking) cows, 34,000 dry (pregnant) cows, 70,000 heifers (12-18 month old cows), and 69,000 calves (less than 12 month old cows)]. Two hundred and sixteen of these facilities (with 302,000 animals) are located in the Chino Basin, while 35 of the facilities (with 67,000 animals) are located in the San Jacinto River Basin.

The CWA defines a concentrated animal feeding operation (CAFO) as any AFO that either meets a certain animal population threshold, or, regardless of population, is determined to be a significant contributor of pollutants to waters of the United States by the appropriate authority. The CWA states that all CAFOs are point sources, and thus are subject to NPDES permitting requirements. When considering the designation of an AFO as a CAFO as a result of being a significant contributor of pollutants, the appropriate authority (the Regional Board is an appropriate authority) must consider certain factors. These factors include, in part, the location of the AFO relative to surface waters, the slope, rainfall and other factors that increase the likelihood or frequency of discharges, and the impact of the aggregate amount of waste discharged from multiple AFOs in the same geographic area. Regional Board staff has determined that all dairies, heifer ranches and calf nurseries in the Region meet one or more of these criteria, and, therefore, should be designated as CAFOs under the CWA. Tentative Order No. R8-2004-0055 designates all dairies, heifer ranches and calf nurseries in the Region as CAFOs, and makes them subject to NPDES requirements. Therefore, the acronym "CAFO" will be used to describe all facilities addressed by Tentative Order No. R8-2004-0055.

The wastes generated by CAFOs within the Santa Ana Region include manure that the animals excrete in the corrals, process wastewater¹ (primarily wash water from the milk barn), including storm water runoff from manured areas. Except for the manure that a milking cow excretes while in the milk barn,

¹ *Process wastewater means water directly or indirectly used in the operation of the AFO for any or all of the following: spillage of overflow from animal watering systems; washing, cleaning, or flushing pens, barns, manure pits, or other AFO facilities; direct contact swimming, washing, or spray cooling of animals; or dust control. Process wastewater also includes any water which comes into contact with any raw materials, products, or byproducts including manure, litter, feed, milk, or bedding.*

all of the manure excreted from the animals is deposited in the corrals. The average moisture content of manure when it is removed from the corrals is about 33% (all of the manure numbers used in this report refer to manure with a 33% moisture content). In 2003, CAFOs removed approximately 1.5 million tons of manure from corrals in the Region. This is equivalent to about 3,500,000 cubic yards of manure. It is estimated that 14 million gallons of wash water, which contain about 10 percent of the manure produced by milking cows, is discharged to the ground each day. Wastes produced at CAFOs contain high levels of bacteria, biochemical oxygen demand, ammonia, nitrate, phosphorus, and other salt compounds.

Proper management of wastes from CAFOs is essential to protect the surface and groundwater resources of the Region. Wastes in rainfall runoff from CAFOs in the Chino Basin have the potential to affect Chino Creek, Cucamonga Creek/Mill Creek and Reach 3 of the Santa Ana River, which are 303(d) listed impacted water bodies. Any process wastewater from CAFOs that is discharged to the Santa Ana River affects the quality of groundwater in Orange County, since the Orange County Water District captures and percolates a significant amount of the flow of the Santa Ana River to recharge the Santa Ana Forebay Groundwater Subbasin.

The Chino Basin continues to be considered to have the highest concentration of dairy animals in the world, with its 216 facilities and 302,000 animals located within an area of about 25 square miles (15,000 acres). The application of manure and process wastewater to the ground in the Chino Basin has resulted in significant groundwater pollution, specifically total dissolved solids (TDS) and nitrate. Affected groundwater in the Chino Basin also impacts the quality of the Santa Ana River because the Santa Ana River becomes a gaining stream in the Prado Basin where groundwater from the Chino Basin contributes to the surface flow of the Santa Ana River.

Wastes from CAFOs in the San Jacinto River Basin have the potential to affect the San Jacinto River, Canyon Lake and Lake Elsinore. Canyon Lake and Lake Elsinore are 303(d) listed impacted water bodies. Phosphorus from various sources, including CAFOs, is considered to be the primary cause of algae blooms in Lake Elsinore, the largest natural freshwater lake in Southern California. These algae blooms deplete oxygen in the lake, creating fish kills and other conditions that affect the economic development and aesthetics of the area.

Beginning in 1972, and continuing through 1994, the Regional Board's regulatory approach was to issue individual waste discharge requirements to each dairy, heifer ranch and calf nursery. Changes in the location, size, number of animals, or operator of these facilities were frequent, necessitating frequent rescissions of existing waste discharge requirements and adoption of new requirements by the Regional Board. The time demands to draft individual waste discharge requirements for the large number of these facilities that were in the Region far exceeded the staff resources available to do so. Consequently, in 1994, the Regional Board adopted Order No. 94-7, the first general waste discharge requirements for these facilities. When Order No. 94-7 expired in 1999, the Regional Board adopted Order No. 99-11, General Waste Discharge Requirements For Concentrated Animal Feeding Operations (Dairies and Related Facilities) Within The Santa Ana Region (NPDES NO. CAG018001). Order No. 99-11 expired on August 1, 2004, but stated that the Order shall remain in force until a new general permit is issued. Adoption of Order No. R8-2004-0055 is necessary to continue regulatory oversight of the CAFOs within the Region.

Criteria cited in 40 CFR 122.28 state that general permits may be issued for facilities 1) involving the same or substantially similar types of operations; 2) discharging the same types of wastes; 3) having the same or similar operating conditions; 4) requiring the same or similar monitoring; and 5) that are more appropriately regulated under a general permit rather than individual permits. The types of wastes and appropriate waste discharge requirements for dairies and related facilities are similar. Given this, the CAFOs in the Region can be adequately and appropriately regulated by coverage under the terms of a general waste discharge permit.

II. Basis for Discharge Limitations

Wastes from CAFOs contain high concentrations of salts (total dissolved solids, including nitrates). These wastes originate from the excretion of manure in corrals and milk barns. Wash water used in the milk barn for milk barn and cow cleaning contains approximately 10 percent of the daily manure excreted from a cow². Wash water is flushed from the milk barn, generally into on-site wastewater containment ponds. Also, rainfall runoff that comes into contact with manure in the corrals carries manure from the corrals into the wastewater containment ponds.

The Regional Board has conducted extensive computer modeling studies on TDS and nitrate to determine acceptable salt loading rates to groundwater from various sources, including CAFOs. These studies are the basis of the TDS and nitrogen management plan presented in the 1995 Water Quality Control Plan for the Santa Ana River Basin (Basin Plan) and its most recent amendment (Regional Board Resolution No. R8-2004-0001, hereinafter referred to as the Basin Plan Amendment). The State Water Resources Control Board (SWRCB) approved the Basin Plan Amendment on September 30, 2004. The Basin Plan Amendment will become effective upon approval by the Office of Administrative Law (OAL) and USEPA (expected by December 2004). The Basin Plan Amendment incorporates an updated Total Dissolved Solids (TDS) and Nitrogen Management Plan for the Santa Ana Region, which includes revised groundwater subbasin boundaries (groundwater management zones), revised TDS and nitrate-nitrogen quality objectives for groundwater, revised TDS and nitrogen waste load allocations, revised reach designations, and revised TDS and nitrogen objectives and beneficial uses for specific surface waters.

The application of manure and the discharge of process wastewater to land results in the discharge of salts, and other pollutants, that has adversely impacted, and continues to adversely impact, the quality of groundwater and surface water in the Region. Dairy manure contains much more salt per unit of nitrogen than commercial fertilizers. The Regional Board's 1990 report, "Dairies and Their Relationship to Water Quality Impacts in the Chino Basin", showed that the use of manure as a fertilizer results in two to four times more salt reaching groundwater (up to 10 times more non-nitrate salts) than the use of non-manure commercial fertilizers. For this reason, the use of manure to meet the nutrient needs of crops results in excessive application of salts that are not utilized by plants, which results in the discharge of these salts to groundwater.

² From "Dairy Waste Management," commissioned by the Santa Ana Watershed Planning Agency (SAWPA) and prepared by Albert A. Webb Associates, March 1974

The majority of the CAFOs in the Region overlie the Chino North Groundwater Management Zone and several groundwater management zones in the San Jacinto River Basin. All of these groundwater management zones lack assimilative capacity for TDS and nitrogen discharges from CAFOs. For groundwater management zones without assimilative capacity, salt inputs that exceed the water quality objectives for these management zones cannot be allowed (State Water Resources Control Board Order No. 73-4, the Rancho Caballero decision). To meet the water quality objectives in the Chino North Groundwater Management Zone and the groundwater management zones in the San Jacinto River Basin, the discharge of corral manure and other animal wastes, such as process wastewater, and their application on cropland, must be controlled to prevent exceeding water quality objectives. Salt discharges in excess of water quality objectives can only be allowed if the impacts of the salt discharges are offset.

Order No. 99-11 included three significant changes from the Regional Board's prior CAFO regulatory program. First, Order No. 99-11 prohibited the disposal of corral manure anywhere in the Region and prohibited the use of corral manure as a fertilizer in any groundwater subbasin lacking assimilative capacity for salts, including the Chino Basin, thereby prohibiting the application of any corral manure in the Chino Basin for any reason (prior to the adoption of Order No. 99-11, the disposal of manure was limited to 4.4 tons/acre on disposal land, and use of corral manure as a fertilizer on cropland was limited to 17.6 tons/acre). Second, corral manure was required to be hauled from the facility within 180 days of being removed from the corrals, thereby preventing the long-term accumulation of manure stockpiles on-site (prior to the adoption of Order No. 99-11, some facilities were increasingly stockpiling manure on-site rather than paying to have the manure hauled away). Third, Order No. 99-11 required all CAFOs to develop and implement engineered waste management plans (prior to the adoption of Order No. 99-11, repairs to waste management structures occurred on an as needed basis, and comprehensive waste management design, construction or operation plans for CAFOs did not exist).

Concurrent with the adoption of Order No. 99-11, the Regional Board adopted Cease and Desist Order (CDO) No. 99-65. CDO No. 99-65 included a time schedule for CAFOs to develop and implement their engineered waste management plans (EWMPs). Also, as a result of the significant public comment regarding the economic hardship that would result for farmers in the Chino Basin if they were not allowed to use corral manure on their cropland, and considering the limited, and decreasing amount of cropland that was available in the Chino Basin, CDO No. 99-65 allowed CAFOs to continue to supply manure for use on existing cropland in the Chino Basin at agronomic rates unless the Regional Board determined that progress was not being made toward construction of a second desalter in the Chino Basin.

Chino Basin

Eighty six percent of the CAFOs in the Region are located in the Chino Basin. Based upon data collected from the CAFO annual reports for 2003, 1.2 million tons of corral manure were removed from the corrals in the Chino Basin. Of the 1.2 million tons of corral manure that were removed from the corrals in 2003, 10% (118,000 tons) was applied to cropland within the Chino Basin, 44% (529,000 tons) was hauled to cropland outside Chino Basin, but within the Region, 26% (316,000 tons) was hauled to composting facilities, and 20% (233,000 tons) was hauled to cropland located outside the Region. Since 1999, an average of about 127,000 tons of manure per year were applied to cultivated

croplands in the Chino Basin. In comparison, in the five years prior to 1999, over 400,000 tons of manure per year were applied to land in the Chino Basin for disposal, use as fertilizer and placed in accumulating stockpiles (the amount of manure remaining in the Chino Basin each year had been slowly decreasing since its peak in the early 1980s when well over 500,000 tons of manure remained in the Chino Basin each year).

The Chino I desalter began operation in August 2000. The extraction wells that supply water to the desalter remove an average of about 14,500 tons of salt per year from the Chino Basin. Kaiser Steel is being credited with a salt offset of 4,000 tons of this salt each year for a period of 25 years, pursuant to a previous settlement agreement with the Regional Board in 1993. Pursuant to a 1996 agreement between the Regional Board, the Chino Basin Watermaster and the Chino Basin Appropriate, Agricultural and Non-Agricultural Pools, the salt removed from the Chino I desalter, minus the 4,000 tons per year that is credited to Kaiser Steel, is credited as an offset for continuing salt discharges from CAFOs in the Chino Basin. This means that an average of about 10,500 tons of salt removal is available each year as an offset for continuing salt discharges from CAFOs in the Chino Basin. Regional Board staff estimates that about 5,000 tons of salt will reach the groundwater each year as a result of the discharge of wash water, which contains the manure excreted by the cows when they are in the milk barn. The remaining offset, about 5,500 tons of salt removal per year, is available to offset discharges to groundwater as a result of the percolation of rainfall runoff from corrals and rainfall runoff from temporary manure stockpiles. Although the amount of salt reaching groundwater from these two sources cannot be accurately measured, Regional Board staff estimates that the amount of salt reaching groundwater from these two sources is likely not greater than the available offset. Since the salt that is present in discharges from wash water and on-site rainfall runoff is being offset by the desalter, Order No. R8-2004-0055 does not prohibit these discharges, and CAFOs can continue these discharges in the Chino Basin.

Since the salt offset that is available for CAFOs in the Chino Basin is considered to be entirely utilized by wastewater discharges from the CAFOs, no offset is available for the salt that reaches groundwater from any application of corral manure to land in the Chino Basin, including the application of corral manure for fertilizer. This is why Order No. 99-11 prohibited the application of corral manure for any purpose in the Chino Basin and why the same prohibition is included in Order No. R8-2004-0055. However, CDO No. 99-65 allowed the CAFOs to continue to supply manure for application to existing cultivated croplands (not pasture lands) within the Chino Basin at agronomic rates unless the Regional Board found that progress was not being made toward the construction and operation of a second desalter within the Chino Basin. There has been progress toward the construction and operation of a second desalter, so the application of manure on existing cultivated croplands in the Chino Basin has continued (construction of a second desalter is underway and is expected to be completed in early 2005). As noted above, since the adoption of Order No. 99-11, an average of about 127,000 tons of manure per year were applied to cultivated croplands in the Chino Basin. The application of manure at this rate will result in about 9,500 tons of salt reaching the groundwater each year. With the adoption of Order No. R8-2004-0055, CDO No. 99-65 will no longer exist. Since there is no assimilative capacity available in the Chino Basin for this salt loading and since there is no offset available to provide mitigation for this salt loading, the prohibition included in Tentative Order No. R8-2004-0055 on the application of manure in any groundwater subbasin lacking assimilative capacity will

result in the cessation of the continued application of manure for fertilizer on cultivated croplands in the Chino Basin.

San Jacinto River Basin

The 1995 Basin Plan stated that all of the San Jacinto groundwater basins with the exception of the Canyon Subbasin had assimilative capacity for planned salt waste loads. Since the San Jacinto groundwater basins did not lack assimilative capacity, the continued discharge of dairy wastewater and the application of corral manure on cultivated croplands in the San Jacinto River Basin was not prohibited by Order No. 99-11. However, the recent Basin Plan Amendment states that all the groundwater management zones in the San Jacinto River Basin, with the exception of Canyon Lake and Perris North, lack assimilative capacity for additional salt inputs.

Historically, manure has been used to supplement the use of commercial fertilizer on agricultural fields in the San Jacinto River Basin. When the Regional Board adopted Order No. 99-11 and prohibited the disposal of corral manure anywhere in the Region and prohibited the use of corral manure as a fertilizer in the Chino Basin, most of the 400,000 tons of manure that was previously remaining in the Chino Basin each year was then hauled to the San Jacinto River Basin for use as fertilizer. Currently, it is estimated that there are about 77,000 acres of land under cultivation in the San Jacinto River Basin. According to the 2003 CAFO annual report data, approximately 631,000 tons of manure were applied as fertilizer in the San Jacinto River Basin. About 423,000 tons of this was manure hauled from the Chino Basin. The remainder of the manure was from the CAFOs in the San Jacinto River Basin, where 93% of the corral manure removed by the CAFOs remains in the San Jacinto River Basin. The 631,000 tons of manure represents a loading of approximately 47,000 tons of salt to the San Jacinto River groundwater subbasins each year. Wash water and storm water runoff discharges account for an additional salt loading of about 4,000 tons per year, for a total salt loading from all CAFOs in the San Jacinto River Basin of about 51,000 tons per year.

Currently, salt offset programs that could allow for the continuation of these salt discharges in the San Jacinto River Basin have not yet been proposed. A coalition of local CAFO and farming representatives have formed the Western Riverside County Ag Coalition to study and formulate opportunities for salt offsets. However, at this time, no credible options have been developed. In order to allow time for this coalition of CAFOs and agricultural farm operators to formulate an offset proposal or implement efforts to cease the application of manure in the San Jacinto River Basin, Tentative Order No. R8-2004-0055 proposes a 3-year compliance time schedule for the prohibition of land applied manure.

As previously noted, Canyon Lake and Lake Elsinore have been placed on the 303(d) list of impaired water bodies due, in part, to the effects of excessive amounts of phosphorous. The use of manure as a fertilizer on cropland is considered to be one of the sources of phosphorous. Previously, the Regional Board has attempted to limit the amount of manure used for agricultural purposes by including an agronomic rate limitation on the use of manure as a fertilizer in Order No. 99-11.

Consistency with USEPA Nutrient Management Plan Requirements

In March 1999, the United States Department of Agriculture (USDA) and the USEPA finalized their unified national strategy for AFOs. In general, the national strategy recommended the development of comprehensive nutrient management plans (CNMPs) that were intended to bring each CAFO into compliance with the requirements of the Clean Water Act (CWA) and to minimize the impacts to groundwater and surface water from dairy wastes by the implementation of best management practices. In general, a CNMP would assure that appropriate dairy wastewater facilities were developed, constructed and maintained to comply with the requirements of the CWA, and that the use and application of wastewater and manure (i.e. nutrient management) was managed to minimize impacts to groundwater and surface water. The most recent revisions to the NPDES and Effluent Limitation Guidelines and Standards for CAFO regulations, published on February 12, 2003, support this national strategy by requiring the largest CAFOs to develop and implement CNMPs.

Tentative Order No. R8-2004-0055 does not require the development and implementation of CNMPs. The requirements included in Tentative Order No. R8-2004-0055, however are equivalent to, or more stringent than, what would be required in a CNMP. This is based on the following:

- The development and implementation of engineered waste management plans (EWMPs) is required of all CAFOs in the Santa Ana Region to insure professional design, construction and operation of facility process wastewater and runoff containment systems to prevent prohibited process wastewater discharges to surface waters;
- Disposal of liquid wastes and corral manure to land is prohibited unless it is mitigated by an approved program to offset salt discharges to groundwater;
- Annual reporting of manure production and the destination of all manure that is generated, submittal of animal population statistics, and process wastewater containment system monitoring are required;
- The nutrient management component of CNMPs does not address all salts, only nutrients such as nitrogen and phosphorus, whereas Tentative Order No. R8-2004-0055 addresses all salts, including nutrients.

Development and Implementation of EWMPs

In compliance with the CWA and the California Code of Regulations, Tentative Order No. R8-2004-0055 prohibits discharges to any surface water bodies, or tributary thereof, unless rainfall events, either chronic or catastrophic, cause an overflow of process wastewater from a facility designed, constructed and operated to contain all process wastewater plus the runoff (that has been commingled with manure) from a 25-year, 24-hour rainfall event (Title 27, Chapter 7, Subchapter 2, Article 1, Section 22562(a), California Code of Regulations and 40 CFR Part 412). Therefore, process wastewater in overflows resulting from rainfall events that are chronic or catastrophic, or are in excess of a 24-hour, 25-year rainfall event, may be discharged to surface water bodies in accordance with requirements specified in this Order. To insure that compliance with these requirements is achieved, all CAFOs are required to develop and implement an EWMP. The guidelines for the preparation of an EWMP are included in Attachment "B" of Tentative Order No. R8-2004-0055. It is intended that Attachment "B" can be revised, as necessary, by the Executive Officer. Therefore, as with expired Order No. 99-11, Tentative

Order No. R8-2004-0055 authorizes the Executive Officer to make necessary revisions to Attachment "B".

Prohibition on Covering New Discharges Under this Order

The 2003 California 303(d) List and TMDL Priority Schedule includes several surface water bodies in the Santa Ana Region as impaired due to CAFOs, including Chino Creek, Mill Creek (Prado Area), and Reach 3 of the Santa Ana River in the Chino Basin for nutrients, pathogens, salinity/TDS/chlorides, and suspended solids. In the San Jacinto River Basin, Canyon Lake and Lake Elsinore have also been listed on the California 303(d) impaired waters list. The CWA states that NPDES permits cannot be issued to a new source (discharger) if the discharge will cause or contribute to the violation of water quality standards, unless certain specified criteria are met, including the development of TMDLs. In the absence of a current TMDL, in the past, USEPA has recommended that a general permit be limited to current facilities, and that any new sources (i.e., construction of any new facilities) be processed through an application for an individual NPDES permit. Therefore, Tentative Order No. R8-2004-0055 prohibits new sources (i.e., new facilities) from being covered under this general permit. However, this requirement is not expected to be an issue since the last new CAFO that was constructed in the Santa Ana Region was believed to be in the late 1980s.

III. Coverage Under the General NPDES Permit

Dischargers Currently Regulated Under Order No. 99-11 and Dischargers that have Submitted NOIs

These dischargers will be automatically enrolled under the tentative order, once it is adopted. Dischargers who have not yet submitted an acceptable EWMP remain required to do so.

Dischargers Not Currently Regulated Under Order No. 99-11 and Dischargers that have not Submitted NOIs

At least 60 days prior to initiating a discharge at an existing facility, the discharger is required to submit a Notice of Intent (NOI) (see Attachment "A") with the appropriate filing fee and is required to develop an acceptable EWMP³ within 90 days of receiving the Executive Officer's authorization to discharge wastes.

IV. Discharge Authorization Letter

Upon adoption of this Order, the Executive Officer will issue discharge authorization letters to dischargers currently enrolled under Order No. 99-11 or who have submitted an NOI to be covered under a general permit.

³ New operators/owners of existing facilities for which an EWMP has been approved are not required to submit an additional EWMP.

Upon receipt of a complete application for initiation of a discharge at an existing facility, the Executive Officer will review the application to determine eligibility for discharge under this Order. If the Executive Officer determines that the discharger is eligible to discharge wastes under this general order, the Executive Officer may authorize the proposed discharge. Otherwise, the Executive Officer may require the discharger to obtain individual waste discharge requirements.

V. Antidegradation Analysis

The Regional Board conducted extensive TDS and nitrate studies using computer models to determine acceptable salt loading rates to groundwater from various land uses, including dairies and other concentrated animal feeding operations. These studies indicate that if the requirements specified in the proposed general permit are met, water quality of the Region is not expected to degrade as a result of discharges authorized under this general permit. The Regional Board, in establishing the requirements in the tentative order, has taken into consideration the requirements of the State and Federal "antidegradation policies" and has determined that the discharges are in conformance with the antidegradation policies.

VI. Written Comments

All written comments regarding the tentative general order should be submitted to: Stephen D. Mayville, Regional Water Quality Control Board, 3737 Main Street, Suite 500, Riverside, CA 92501. Comments can be submitted by USPS mail or by email to: smayville@waterboards.ca.gov.

VII. Information and Copying

Persons wishing further information may write to the address provided (see VI, above) or call the Regional Board at (951) 782-4130. Copies of the proposed waste discharge requirements, and other documents are available at the Regional Board office for inspection and copying by appointment scheduled between the hours of 10:00 a.m. and 4:00 p.m., Monday through Thursday (excluding holidays).

VIII. Register of Interested Persons

Any person interested in a general permit, or in a particular application or group of applications, may leave his name, address, and phone number as part of the file for an application. Copies of tentative waste discharge requirements will be mailed to all interested parties.

IX. Workshop and Public Hearing

The Regional Board will be conducting a public workshop at the regularly scheduled meeting on December 17, 2004 to solicit comments on these tentative general waste discharge requirements. Oral comments will be received during this workshop and all parties are encouraged to submit written comments. These comments will be considered by staff and incorporated into Tentative Order No. R8-2004-0055, as appropriate.